

# **Interim Statewide Public Safety Communications Systems Plan**

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***Prepared by the  
State Interoperability  
Executive Committee***

***March 30, 2004***

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## **A Message from the Chair**

I am pleased to provide the Interim Plan developed by the State Interoperability Executive Committee (SIEC). The Interim Plan builds off of the successful State inventory published in December 2003. Based on the inventory, the State Interoperability Executive Committee developed several potential solutions. This interim plan outlines the potential solutions and the implementation timeline. These solutions are only interim solutions and do not necessarily reflect local government's concerns. The plan will be updated to incorporate local government survey responses.

The SIEC is also on a very aggressive timeline to inventory and develop a statewide interoperability plan. The final plan will be completed by December 31, 2004. The statewide plan will set strategic direction for immediate and future work. During the planning process, we will involve as many public safety organizations as possible to represent federal, state, local and tribal views.

As Chair of the State Interoperability Executive Committee (SIEC), I strongly encourage your ongoing support in helping to solve the complex interoperability issues facing law enforcement officers, firefighters, highway maintenance workers, emergency medical service providers, and other public safety officials supporting the citizens of Washington state.

Sincerely,



Lowell Porter

Chair, State Interoperability Executive Committee  
Chief, Washington State Patrol

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## **Executive Overview**

The submission of this interim plan completes the second required task of the State Interoperability Executive Committee (SIEC), as outlined in its enabling legislation. The four primary deliverables of the SIEC over the 2003-05 biennium are: (1) conduct an inventory of state government-operated public safety communication systems; (2) complete an interim statewide public safety communications plan, which is the subject of this report; (3) conduct an inventory of all public safety communications systems in the state, to include local government; and (4) prepare a final statewide public safety communications plan.

This interim plan takes into account information gathered from the inventory of state government-operated communications systems presented to the legislature in December 2003, and reflects the thinking of public sector communications professionals throughout the state who have assembled to address interoperability issues since the SIEC's enabling legislation was enacted.

### **Plan Highlights**

This plan focuses on how existing resources can be used in a more coordinated, collaborative fashion. Specifically, this plan proposes to:

- Select and use an existing common command and control channel is to allow incident commanders from multiple disciplines to communicate with each other.
- Use intra-disciplinary command and control channels be more effectively to enable communication between different jurisdictions.
- Identify caches of radios located throughout the state and plan for rapidly deploying these assets to provide instantaneous interoperability at the scene of a major incident.
- Establish plans that will allow interoperability gateway devices to be shared and properly positioned in times of need.
- Adopt the National Incident Management System (NIMS) by all state agencies for incident command and control.

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## Background

The *Inventory of State Government-Operated Public Safety Communications Systems*, published by the SIEC in December 2003, contained several key findings that could have a significant impact on state agencies' abilities to effectively communicate with each other in time of crisis. The most significant of these findings were as follows:

- The majority of state agencies communicate on three different radio frequency bands. In the absence of some kind of intermediary technology, it is impossible for radios using different frequency bands to communicate with each other.
- The majority of state radio assets use analog technology.
- A limited number of interoperability assets have recently been purchased. These assets will allow disparate radio communication systems to connect and interoperate during major incidents.
- Agencies do not share a common standard for Command and Control structure or communications protocol for major incidents.

The interim statewide public safety communications plan will address these important findings, and provide a short-term strategy that state agencies can implement over the next 24 months to help mitigate some of the interoperability barriers.

The final statewide public safety communications plan, due in December 2004, will contain more explicit, long-term interoperability recommendations. The recommendations contained in this interim plan have been developed with the intent of augmenting any future, permanent plan.

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## Scoping Assumptions

**Affected Agencies:** Because the inventory of local government public communications has not yet been completed, the recommendations in this document deal primarily with state government-operated communications systems. It should be noted that representatives from local government did participate in this planning process, and the recommendations contained in this document reflect their input and perspective.

**Funding:** The recommendations contained in this report did not assume funding for major purchases of equipment or planning. The solutions contained herein focus primarily on ways agencies can coordinate and collaborate to stretch limited resources currently available, and create synergy wherever possible. Any solutions that require moderate or significant funding are so noted.

**Desired Level of Interoperability** – To enable an effective, coordinated response to a mutual aid or task force event, the incident response commander from each discipline or jurisdiction must be able to effectively communicate with his/her counterparts either at the scene of an incident or at remote locations. Contrary to what many may think, the preferred level of interoperability for incident response is not the ability of all responders from all disciplines and all jurisdictions to be able to communicate with each other all the time. The incident commander is responsible to ensure communication among the resources at his or her command to ensure a coordinated effort. Allowing or enabling routine communications between line personnel across differing disciplines and/or jurisdictions could easily lead to chaos and essentially undermine the benefits of an established comprehensive command and control structure.

**Interoperability Model:** There are three distinct types of emergency response interoperability models:

- *Day-to-day* interoperability involves coordination during routine public safety operations. Interoperability is required, for example, when firefighters from around a county join forces to battle a structural fire or when neighboring law enforcement agencies must work together during a vehicular chase.
- *Mutual aid* interoperability involves a joint and immediate response to accidents, hazardous materials incidents or natural disasters such as tornados or major flooding and requires tactical communications among several groups of public safety officials.
- *Task force* interoperability involves local, state and federal agencies working together for an extended period of time to address a public safety

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problem. Task forces lead the extended recovery operations for major disasters, provide security for major events and conduct operations in response to prolonged criminal activity.

Although there are challenges to be addressed in the day-to-day and mutual aid scenarios, these events are generally of a shorter duration, typically requiring fewer disciplinary and inter-jurisdictional resources, and infrastructure is generally available for alternate communication paths (for example the public switched telephone network, cellular technologies, etc.). Both day-to-day and mutual aid scenarios generally involve a few neighboring entities who have established a history of working together.

Task force interoperability involves a large number of public safety responders that are required to converge quickly upon a single, catastrophic event, oftentimes with agencies that are unfamiliar with each other. The event duration is usually protracted, and there may or may not be infrastructure to support operations. Task force response incidents are high risk, relatively infrequent events that require coordinated response from a large number of disciplines from multiple jurisdictions, as shown in *Figure 1\** below:

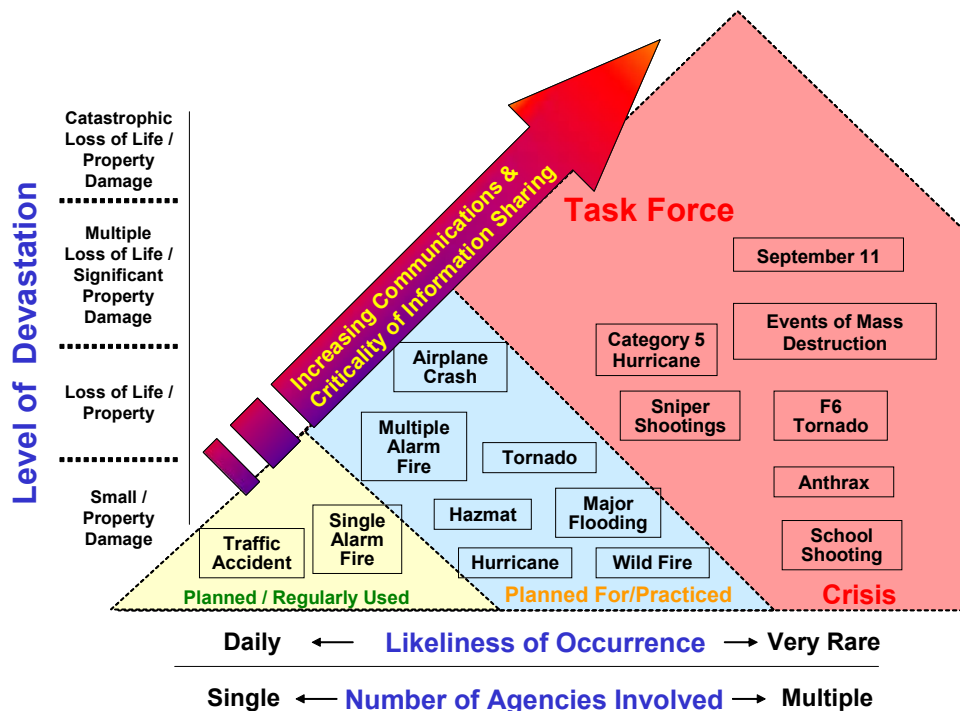


Figure 1

Due to the increased potential for loss of life or property resulting from such an event, task force interoperability will be the primary focus of the recommendations in this plan.

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\* Used with permission of CTA Communications, Inc.

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## The Impact of Frequency Use on Interoperability

As reported in the inventory of state government-operated public safety communications systems, state public safety agencies operate in one of three public safety radio bands as shown in *Figure 2*:

AGENCY	Frequency	Platform	Use as a % of State Total
Emergency Management Division	138-144	Motorola	1%
Natural Resources	148-174	Relm & Motorola	15%
Washington State Patrol	148-174	Kenwood/Motorola	15%
Fish and Wildlife	148-174	Motorola/Thales	7%
State Parks and Recreation	148-174	Kenwood/Motorola	4%
Department of Ecology	148-174	Motorola	0%
Department of Transportation	851-869	EFJohnson	33%
Department of Corrections	851-869	Motorola	25%
Department of Health	851-869	EFJohnson	0%

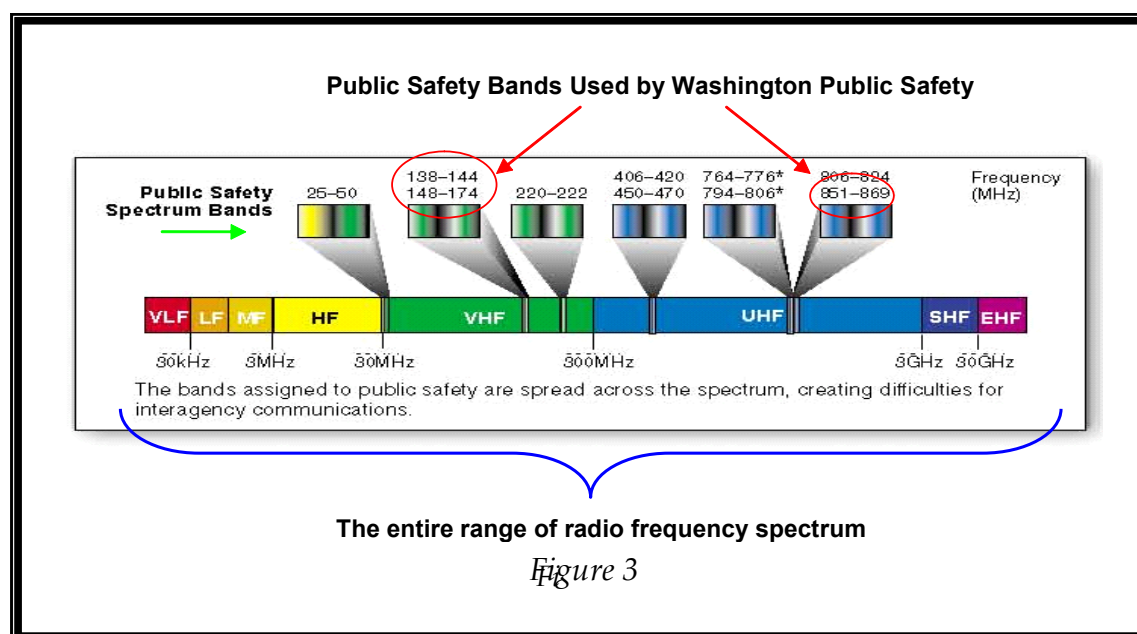
*Figure 2*

To better appreciate the significance of this finding, as well as the recommendations that follow, it is necessary to understand some basic wireless communications concepts

**Radio Spectrum** refers to the entire range of usable radio frequencies in the electromagnetic spectrum. It is important to note that the radio spectrum is a finite resource. Because spectrum is a fixed resource that is in high demand by commercial service providers, such as the entertainment broadcast industry, and public sector entities alike, effective allocation and management of the frequency spectrum is essential.

**Frequency Bands** refer to the contiguous spectrum between two defined frequencies or points of the spectrum. For example, frequency located between 300 MHz and 3,000 MHz in the radio spectrum is referred to as the Ultra High Frequency (UHF) band. VHF, or Very High Frequency, refers to the spectrum between 30MHz and 300MHz. Within or across these major frequency bands, other specified-use blocks have been identified. These may be dedicated to television, cellular phone traffic and the like. In the same way, 10 frequency bands have been dedicated for public safety use as shown in *Figure 3* on page 6.





**Communications Channels:** Within each frequency band are specific frequency channels used for transmitting and/or receiving, electromagnetic signals. Much like the channels used within the VHF band, used for television, there are frequencies established and licensed to government or commercial entities for a specific purpose or use. The communications channels used for public safety have traditionally been 25 KHz wide (referred to as “wideband”). However, in an effort to conserve precious spectrum resources, newer, narrow analog and digital technologies have been developed to reduce channel width to 12.5 KHz, and even less in the future (commonly referred to as “narrow band”).

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## **Causes for Technical Disparity in Washington State**

The state public safety communications inventory found that the vast majority of state radio assets use older technology, and the reasons for this merit further discussion.

As noted in the previous section, Washington state agency public safety service providers all communicate in one of three public safety frequency bands. The reasons for operating in different frequencies are generally determined by many factors such as signal propagation requirements, (lower frequencies travel further than higher frequencies), communications content and payload (higher frequencies can rapidly transmit data such as slow scan video in addition to voice), and mission requirements (the need for the Department of Emergency Management to communicate with Department of Defense, for example).

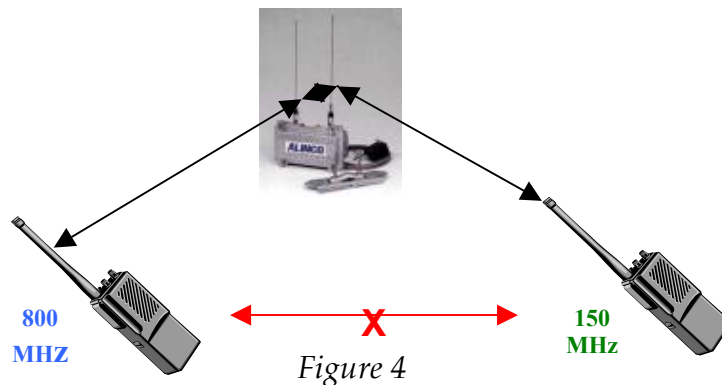
On a more practical level, the determination of what technology to buy and/or what frequency to use, may have been determined by the kind of technology available at the time of purchase, the amount of funding available, or the nature of the need at the time (tactical vs. strategic). These initial purchases created the baseline requirements for subsequent purchases, propagating the use of potentially proprietary technologies. This has resulted in a large inventory of very old equipment that still serves its initially intended purpose. Over the course of time, and due to very legitimate reasons, Washington, like all states, has accumulated a wide range of equipment.

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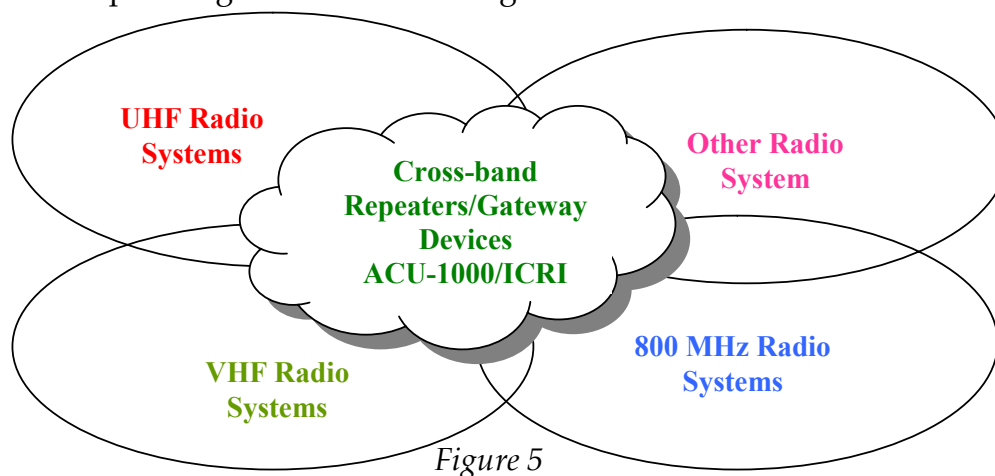
## Interoperability Devices

It was noted in the state inventory report that several state agencies either have acquired, or were planning to purchase in the near future, devices that could be used to provide interoperability in an *ad hoc* manner. These devices could be tactically deployed on short notice to mitigate some of the communications challenges that might arise in a task force aid response scenario. These devices may be deployed strategically to minimize the requirement for on-scene delivery and set-up to aid in a task force response.

**Crossband Repeaters** allow agencies to achieve interoperability between systems operating in different frequency bands. As shown in *Figure 4*, a crossband repeater can receive an audio transmission on one agency's channel and rebroadcast the same audio signal to one or more agencies on their respective frequencies.



**Interoperability Gateways** (see *Figure 5*) interface between radio communications platforms that use different frequencies and equipment from different manufacturers in order to connect incompatible radio systems. Perhaps the most well known of these devices is the ACU-1000, which can allow for quick, on-site patching between various agencies.



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These devices prove to be very useful in addressing interim, temporary and in some cases permanent interoperability issues. Deployment of these devices will be discussed later in this report.

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## Command and Control: Update

In times of crisis, a systematic and organized method of using public safety resources is essential. A generally accepted method of using and deploying assets in a systematic and controlled environment is called incident command, or “command and control.”

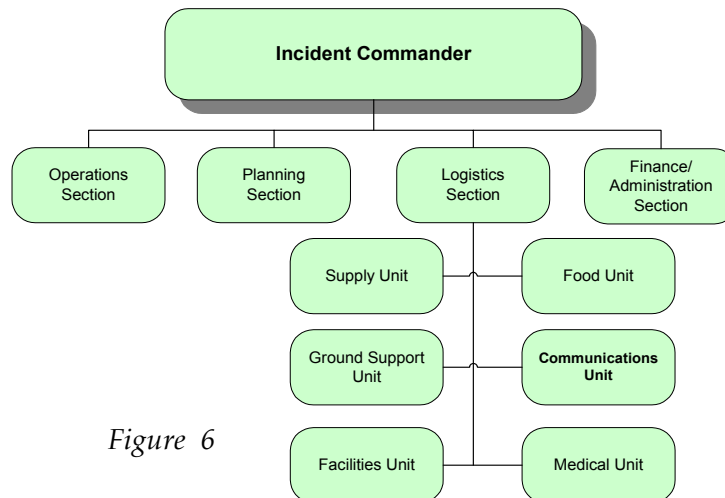
The *Inventory of State Government-Operated Public Safety Communications Systems* found that of the 11 agencies surveyed, there were four different command and control structures in place.

Since the December 2003 inventory report was published, U. S. Department of Homeland Security Secretary, Tom Ridge, announced approval of the National Incident Management System (NIMS). This system is the nation's first standardized incident management plan, creating a unified structure for federal, state, and local lines of government for incident response.

"NIMS gives all of our Nation's responders the same framework for incident management and fully puts into practice the concept of one mission, one team, one fight," Ridge said. "Responders will now be able to focus more on response, instead of organizing the response; and teamwork and assignments among all authorities will be clearly enhanced."

Accordingly, it is the recommendation of this report that state agencies adopt this command and control structure as soon as possible (see *Figure 6*).

***High-level view of the National Incident Management System***



*Figure 6*

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## **Interim Technical Recommendations**

This section describes actions that can be taken to address technical interoperability issues on an “interim” basis. For the purposes of this report, “interim” shall mean the time between when this report is published and 24 months thereafter or until such time as the final statewide report can begin to be implemented thereby superceding this report. Additionally, any recommendations herein have been formulated with the intent that they would augment, any future, permanent plan.

Deployment for technical recommendations is broken down into two timeframes: Those recommendations that could be implemented within the next 12 months (short-term recommendations), and those that could reasonably be expected to be put in place within the next 24 months (mid-term recommendations).

### **Short-Term Technical Recommendations (12 Months)**

This section identifies existing resources available to enable state public safety agencies and local government public safety agencies, at their discretion, to operate existing equipment in an interoperable manner within the four existing, yet separate and disparate frequency bands. These bands are Very High Frequency (VHF), Ultra High Frequency (UHF), 700 MHz and 800 MHz.

Most of the recommendations identified in this section can be achieved or deployed in the near term (within 12 months) with little cost to the agencies.

#### ***Identify/deploy caches of available portable radio equipment***

Caches of available portable radio equipment should be identified and programmed with the appropriate designated interoperable frequencies to deploy at a moment’s notice to the scene of an incident or disaster.

Having caches of radios available for use by the first responder community allows for the immediate interoperability of all those who use the equipment. Having caches (or extra radios and other equipment) is not a new concept in this state, nor is it a new concept nationally. In Washington state, the Department of Natural Resources maintains caches of equipment that could be used during wild land fires. Nationally, the National Inter-Agency Fire Center (NIFC) in Boise, Idaho provides radio equipment caches to assist firefighters on the scene of large, multi-jurisdictional fires. Each cache varies in size and type of equipment and can be tailored to fit the emergency.

In addition to the actual expense of purchasing a cache of radios, additional expenses are incurred every time they are used. Expenses are typically related to

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cleaning, refurbishing and restocking of equipment and batteries. Typically, as caches are used, radio technicians are dispatched with the equipment to ensure that the equipment is used properly and to fix any problems that may occur in the field.

### ***Implement statewide VHF wide-band analog coordination channels***

The very high frequency band (VHF) is the most widely licensed band on a statewide basis in Washington among small to midsize public safety agencies. This band is selected primarily for its radio coverage capabilities. Most radio systems operating in this band are still configured for wide band, analog mode communications (the Washington State Department of Natural Resources is currently capable of narrow band analog operation and is in the process of converting its statewide VHF radio system to digital technology).

The following channels will be designated (following appropriate coordination and approval with the Federal Communications Commission (FCC), agencies, and associations owning these frequencies) as the main statewide coordination channels. These frequencies will enable inter-disciplinary or inter-jurisdictional command personnel to communicate with each other, or to be used within specific disciplines when responding to a mutual aid event.

- **156.135 MHz, On Scene Command and Control Radio Network (OSCCR)** The On Scene Command and Control Radio plan was created in the mid-1980s by a committee of radio users who were also members of the Washington State Chapter of the Association of Public-safety Communications Officers, Inc. (APCO). This committee of APCO was chaired by the Washington State Department of Transportation (WSDOT) and the Washington State Department of Emergency Management (now the Military Department) to provide interoperability between VHF radio users operating in different public safety services (i.e.; police, fire, highways, ambulance, etc.) The WSDOT VHF frequency of 156.135 MHz was chosen since it was in the middle of the VHF band and could be accessed by all users of that band within the radio equipment limitations. WSDOT agreed to convert the frequency from highway use to multi-service use, simplex operation (car-to-car) for on-scene activities only. EMD agreed to handle the administration of the local agencies through their county Emergency Operations Center (EOC) coordinators. WSDOT agreed to administer and coordinate the state agencies. At this time, most VHF operating agencies throughout the state have programmed this channel into their mobile and portable radio units.

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- **155.370 MHz, Law Enforcement Radio Network (LERN)** is a common police radio frequency for statewide use by state and local law enforcement agencies during periods of local disaster, other emergencies, or operations requiring intra or inter agency coordination. LERN consists of two frequencies within the State of Washington. The frequency 155.370 MHz is designated as the primary LERN frequency and is operated in a 'simplex' mode.

LERN (155.370 MHz) has been licensed statewide by the Washington State Patrol on behalf of the LERN Advisory Committee. With approval of the LERN Advisory Committee local agencies may license and operate local bases on 155.370 MHz. LERN (155.370 MHz) has three defined levels of traffic priority.

- **155.475 MHz, National Law Enforcement Network (NLEC)** is a national law enforcement frequency available for use in police emergency communications networks operated under statewide law enforcement emergency communication plans. The LERN plan serves as Washington state's statewide law enforcement emergency communication plan. LERN consists of two frequencies within the State of Washington. The frequency 155.475 MHz is designated as the secondary LERN frequency.

NLEC (155.475 MHz) has been licensed statewide by the Washington State Patrol as dictated by the LERN plan. Only the Washington State Patrol is authorized to license and operate base stations on 155.475 MHz. With approval of the LERN Advisory Committee, local agencies may gain authorization to operate on 155.475 MHz. in compliance with the LERN plan. LERN (155.475 MHz) has three defined levels of traffic priority. An agency desiring to participate in LERN shall address a letter to the chairman of the LERN Advisory Committee, who shall provide the agency with a copy of LERN rules, application agreement, and applicable FCC license forms. (See also 155.370 MHz - LERN)

- **153.830 MHz, Washington state fire service mutual aid/command frequency (Red Net)** is licensed statewide by the Washington Association of Fire Chiefs for use with fire mobilization, earthquakes, floods, mass casualty incidents, major hazardous material incidents, or other emergency situations requiring multi-agency response. Authorized users include:
  - Local fire protection authorities (fire protection districts and municipal fire departments).
  - Local emergency management authorities of Washington.



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- Washington state agencies charged with emergency response.
  - Private entities (commercial companies) providing emergency response in conjunction with local, state, or federal agencies upon recommendation of the local, state, or federal agency.
  - Oregon and Washington agencies when mobilized for incidents within the State of Washington.

Station permits and mobile and portable use permits for using the Red Net frequency may be applied only to the Washington Association of Fire Chiefs in accordance with the guidelines and application procedures of the Red Net fire frequency. An agreement to use Red Net by the Washington Association of Fire Chiefs does not permit the user to cause interference with any other user and must be in use in accordance with FCC rules.<sup>1</sup> It is important to note that this frequency has a 10-watt limitation by FCC rule.

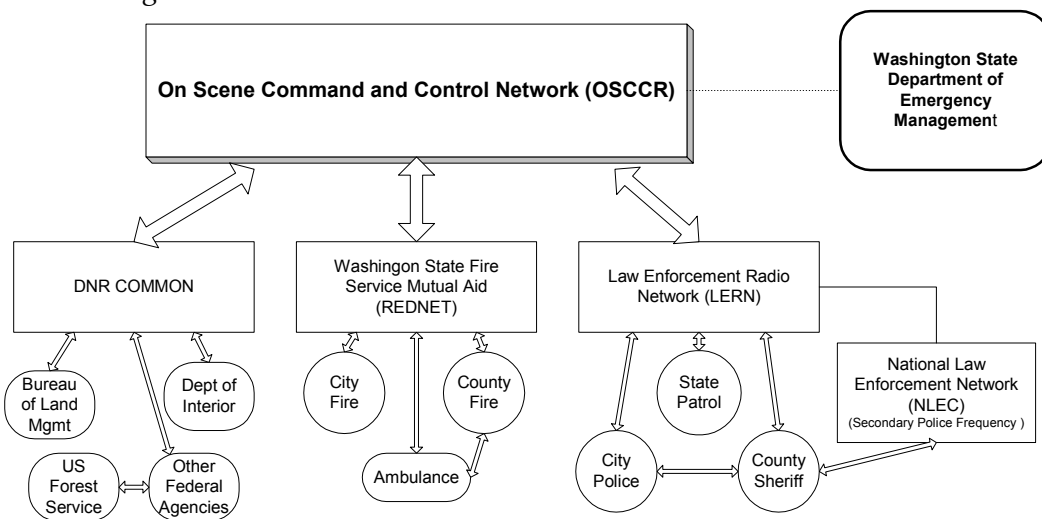
- **151.415 MHz, Department of Natural Resources (DNR) Common (COMMON)** is to be operated in a clear channel, car to car, wide-band mode and is to be used as an on-scene tactical channel as designated by the incident commander. DNR COMMON will be licensed and managed by the Washington State DNR who issues appropriate letters of authorization to system agencies and to appropriate political subdivisions of the state who apply to operate radio equipment on these channels. DNR will provide applicants with appropriate operating procedures and instructions.

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<sup>1</sup> Washington State Association of Fire Chiefs Red Net Frequency Guidelines and Application Procedures (Revised 2-2001).

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As deployed, the use of pre-defined coordination channels could operate as shown in *Figure 7* below:



*Figure 7*

As envisioned above, the On Scene Command and Control Radio Network (OSCCR) is to be operated in a clear channel car-to-car wide-band mode, used as an on-scene incident command channel and as a “call in channel” reporting to the incident commander when multiple disciplines are involved.

OSCCR will be (1) licensed and managed by the Washington State Department of Transportation (WSDOT) in concert with the Washington State Military Department, which will issue appropriate letters of authorization to other state agencies who apply to operate radio equipment on this channel; and (2) in concert with the WSDOT the Washington State Military Department, Emergency Management Division (EMD) will license and manage the channel by issuing appropriate letters of authorization to appropriate political subdivisions of the state who apply to operate radio equipment on this channel. As outlined above, OSCCR is designated as “On Scene Command and Control Radio Network”. Currently WSDOT has letters of authorization in place with many state and local agencies. WSDOT and EMD will provide applicants with appropriate operating procedures and instructions.

First responders on REDNET, LERN, and DNR Common will then be able to easily communicate with the on-scene incident commander and other interdisciplinary/interjurisdictional teams using OSCCR as the incident command channel.

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### **Mid-Term Solutions (24 Months)**

Mid-term solutions are intended to build upon the limited interoperability described in the previous section and enhance interoperability between equipment operating on dissimilar bands. These bands are Very High Frequency (VHF), Ultra High Frequency (UHF), and 800 MHz.

Solutions in this section may have a moderate cost associated with them and will usually take a longer time to implement. Implementation time is expected to be within 24 months from the time of plan acceptance.

Mid-term solutions provide the bridge between short-term solutions using existing resources and long-term solutions that may include deploying new technology.

#### ***Identify additional VHF channels***

As the command and control frequencies proposed in this plan are widely adopted, it is likely that there will be a need for an additional frequency that can be used for statewide command and control.

As the statewide inventory proceeds, it is also anticipated that local jurisdictions using interoperability channels to augment their day-to-day operations will be identified. As a result of creating additional statewide interoperable communications, these jurisdictions will need to be moved to other licensed frequencies. The costs associated with this action are unknown at this time. The major costs associated with moving will be for reprogramming of local radio systems to accommodate the new frequency. Local agencies will need time to consider the budgetary impact of system retuning. It may be necessary for the state to allocate funding to assist local government in this effort.

#### ***Identify those state agencies that have purchased gateway devices***

Gateway devices have the capability for field interconnection between disparate bands and equipment. These devices should be identified so a response and deployment plan can be developed that best supports local and state agencies' areas of responsibility. Following appropriate coordination and approval of affected agencies, plans will be developed to strategically position these assets, with required ancillary equipment, to enable interoperability "in place" when missions dictate. As resources have already been acquired, cost for this activity would be low. Training and procedure manuals will also have to be developed. The SIEC will assign responsibility for this task.

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Areas of the state that are identified as having a long or unacceptable response time for deployment may be covered by the gateway devices that have been purchased, or are being purchased by the Washington State Patrol and other state agencies. Training, procedures, and Memorandum's of Understanding (MOUs) will be established by the agency owning the gateway devices.

***Establish a mini-cache of required portable radio equipment to be used by incident commanders***

To provide immediate interoperable communications capability, small caches of relatively inexpensive portable radio equipment should be purchased for incident commanders to be used at the scene of an incident or disaster. Each major state agency that provides response in times of emergency (DNR, WSDOT, WSP) should create and maintain a small cache of radios at centrally available locations throughout the state. Working in concert with the regional homeland security coordinators, agencies should position these assets so that a mini-cache of radios could be available to an incident commander (upon request) within 90-minutes of such a request. When implemented, incident commanders will be able to quickly create an *ad hoc* interoperable system. These portable radios will be pre-programmed with all designated interoperability channels. Since these agencies currently have licenses to use and manage one or more interoperable channels, this will provide incident commanders with an instantaneous, on-site interoperable communication system.

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## Guiding Principles

Thinking in terms of enterprise radio networks requires a new strategic approach to performing business. No longer does it make sense for each agency to actively engage in disparate approaches with hopes that eventually technology will enable interoperability of different systems. Rather, it is time to build systems with a clear vision that drives the development of interoperable systems from the very beginning. To implement a new enterprise approach, a proposed series of guiding principles follows:

- A. Build wisely, build once and share often.
- B. Spectrum licensed by the state should be maintained as a natural resource and, to the greatest extent possible, be shared and maintained to provide the greatest return on investment.
- C. Communication solutions should be based upon non-proprietary “open” standards when possible.
- D. Topography and population density may dictate the appropriate use of radio frequencies and technology. For example, areas in Washington State that have mountains and tall buildings may require different technology than areas where there are extensive flat lands.
- E. All solutions for state funded radio systems should consider the sharing of assets between state and local governments when possible.
- F. All solutions using state funds should be planned with an enterprise view toward connectivity and interoperability with state communications assets.
- G. All equipment shall have a lifecycle strategy to assist in planning and management.

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## Policy Recommendations

To more effectively guide state investments in public safety communications systems, the SIEC will need to change or create many new processes to manage and coordinate the use of assets in a way that fosters cooperation between state and local government agencies. New business processes should ensure interoperability between radio systems and guarantee that each investment made in a radio system can be exploited by all agencies to achieve the highest possible return on any investment made.

The following policy recommendations may serve as a blueprint to help achieve the goal of interoperability in our state:

- A. Pursuant to state law, the Washington State Information Services Board (ISB) shall maintain oversight responsibility over acquisitions and disposition of state-owned and operated public safety radio systems.
- B. To develop a strategic enterprise approach to managing state public safety communication systems, the SIEC shall recommend funding, pursuant to ISB authority and direction, for major enhancements of state public safety agency networks or equipment effective with the 2005 state fiscal year. This change is required to ensure that investments made in public safety wireless radio communications fit within the guidelines and requirements of a statewide public safety-planning document. In addition, the SIEC shall, in cooperation with the Office of Financial Management, develop special categories in state agency budgets where all hardware, infrastructure, real estate, licensing, maintenance, operations and equipment costs shall be contained.
- C. The SIEC must identify a sustainable funding mechanism to pay for the upgrades in this and subsequent strategic plans, as well as for future staffing requirements such as a single frequency manager for state licensed frequencies. The SIEC shall also apply for federal grants that apply to communication interoperability and exhaust all other grant program opportunities to minimize state general fund costs.
- D. The SIEC will assist, to whatever extent possible, in the standardization and implementation of the National Incident Management System (NIMS), and provide education in the use of NIMS that can be used by all initial responders. This system will include a frequency plan to assist emergency units when entering a disaster area.

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- E. The SIEC will assist with the creation of educational materials to assist state and local public safety entities in interoperable communications.

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## Recommended Legislative Action

The SIEC was tasked with recommending legislation that will help create an atmosphere that would be conducive to interoperability. Potential legislative changes are as follows:

- A. Legislation that governs the operations of many state agencies requires that they recover the cost of providing products and services to other public agencies. This legislative mandate could prove problematic with respect to interoperability should the recipient of needed interoperability equipment or services provided by one agency have insufficient funds to cover the cost of these assets. The SIEC will explore changes in legislation that consider either waiving this requirement or identifying a funding source that could be used to reimburse the agency providing the products or services.
- B. The Department of Natural Resources manages vast amounts of public land and other natural assets on behalf of public schools and other public entities in Washington state. As a trustee for these assets, DNR is legislatively required to wisely manage these trusts to produce a return on investment and compensate the beneficiaries for material changes to the assets they manage. DNR is expected to play a major role in the coordination of land and assets required to achieve enterprise-wide interoperability. The SIEC in conjunction with DNR will explore changes in legislation by which DNR could meet its custodial obligations, while at the same time contributing land or other resources that would further the cause of interoperability in Washington state.
- C. The SIEC shall apply for all federal grants that apply to communication interoperability and exhaust all other grant program opportunities to minimize state general fund costs. However, in addition to any grant funding that may be available, the SIEC must have an identified and sustainable funding source that will enable agencies to achieve acceptable levels of interoperability. The SIEC should create a series of recommendations to the state Legislature that will create a sustainable funding mechanism for state, and perhaps local, governments.
- D. The Legislature should contact the congressional delegation to promote interoperability as a primary consideration for existing grant funding appropriations.



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## **Next Steps**

The tasks necessary to implement this plan will use resources from many agencies over the next 24 months. To establish an initial timeline, high-level tasks and an estimated timeline are included in a Gantt chart as Appendix B.

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## Appendix A – Glossary

**700MHz:** Frequencies in the range of 764 – 776 and 794 – 806MHz.

**800 MHz:** Frequencies in the range of 806-824 and 851-869 MHz.

**Analog:** A technology that uses waveform transmissions to transmit information.

**Base stations:** Common name for all the radio equipment that is located at a fixed location.

**Call in channel:** A frequency or channel where incident responders can contact the on-scene commander for instructions about deployment.

**Channel pairs:** This represents two channels; one channel is used for transmission and a second (paired channel) is used for reception.

**Clear channel:** Legacy analog voice mode allowing backward and forward compatibility. May be used only when available and not in use.

**Digital:** A technology that uses zeros and ones to transmit information.

**Frequency band:** A continuous range of frequencies extending between two limiting frequencies.

**Field interconnection:** Setting up *ad hoc* connections while on the scene of an incident.

**Gateway:** A hardware or software set-up that translates between two dissimilar protocols or systems.

**ICALL:** International calling channel.

**Incident commander:** The person who would be in charge at the scene of an incident. For example, if a plane crashed, typically the first incident commander would be the first person on the scene. Command then might be transferred to a fire chief to work the recovery effort. Thereafter, the commander may change to police, changing from a recovery effort to a crime scene.

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**Letter of authorization:** An agency may authorize another agency or organization to use a frequency that is licensed to it. Such authorization requires a letter from the license holder to the secondary agency or organization, to provide permission to use the licensed frequency.

**Mobiles:** Equipment that is permanently mounted in a transport vehicle.

**Multiple disciplines:** In any major disaster many agencies with unique abilities are called for assistance. Each could be a discipline for the purposes of this report. These would include, and not be limited to, police, fire, transportation, ecology, health, etc.

**Narrow band:** Radio channels that require 12.5 KHz or less of frequency.

**NIMS:** National Incident Management System. The nation's first standardized management plan, creating a unified structure for federal, state, and local lines of government for incident response. For more information, see <http://www.dhs.gov/interweb/assetlibrary/NIMS-90-web.pdf>.

**On scene incident command channel:** A channel or frequency that is used by incident commanders to control the use of personal, equipment and other assets at the scene of an incident.

**On scene tactical channel:** A frequency that can be a division or work group that is working on the scene of an incident.

**Repeater (system):** A system or device that receives a radio signal, amplifies it and retransmits it. It is used in wireless networks to extend the range of base station signals, and expands coverage more economically than by building additional base stations. Repeaters may be used for buildings, tunnels or difficult terrain.

**Retune:** The act of changing frequencies in radio equipment.

**Simplex:** A transmission channel capable of transmission and reception in one direction at a time.

**State frequency pool:** A listing or group of frequencies licensed on behalf of the State of Washington.

**UCALL:** UHF international calling channel.

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**Ultra High Frequencies (UHF):** Frequencies in the range of 406-420 and 450-470 MHz.

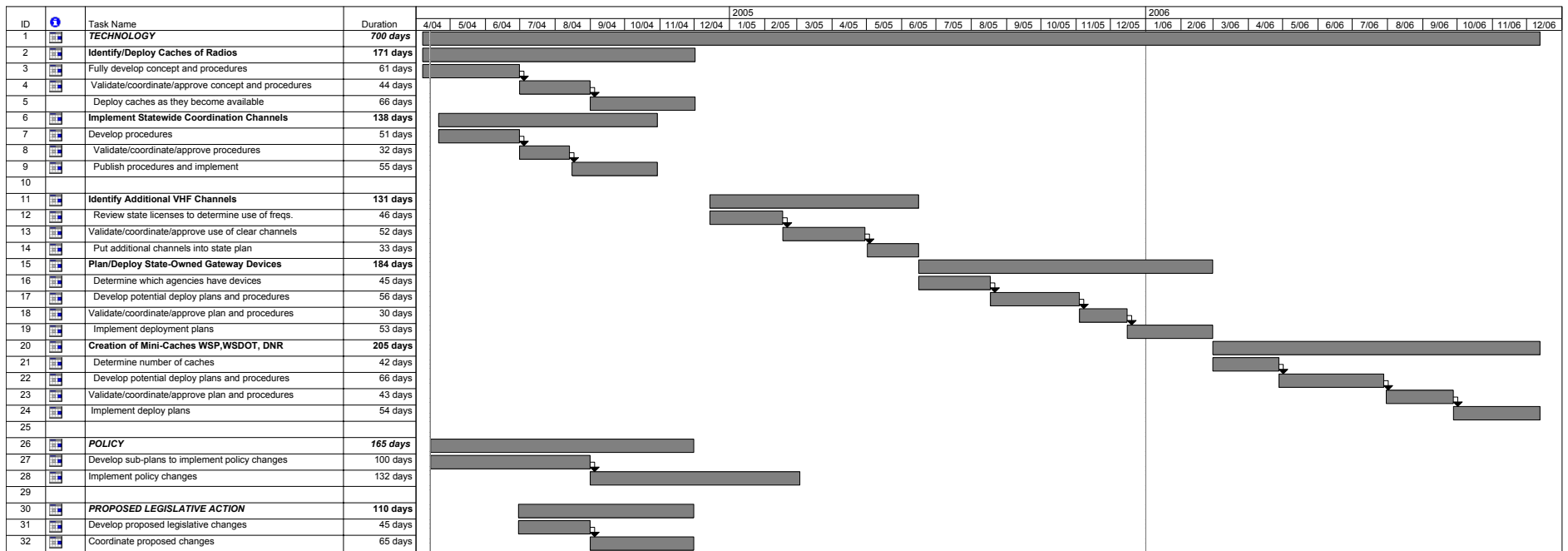
**UTAC:** UHF international tactical channel.

**Very High Frequencies (VHF):** Frequencies in the range of 25-50 MHz and 138-144 MHz.

**Wide band:** Radio channels that require 25 KHz of frequency.

## Appendix B – High-Level Implementation Plan

### *Interim Statewide Public Safety Communications Plan*



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